

FACT SHEET

Fresh Fill Water Start-Up for Plastered Pools

Brought to you by the PHTA Recreational Water Quality Committee (RWQC)

I. INTRODUCTION

The most anticipated stage of a homeowner installing a swimming pool is viewing the project full of water; however, the initial color and clarity of the water may be disappointing. This is a result of the source water properties, including contaminants, and a lack of proper water balance and sanitation. The desire of immediate swimming is replaced by a “not so exciting” daily ritual of proper balancing or “start-up” of the fresh fill pool water.

This fact sheet provides detailed information on fresh fill pool water start-ups. While there are several ways to perform a fresh fill water start-up, this fact sheet focuses on the start-up procedures as recommended by the National Plasterers Council (NPC). Another good reference to consider is the RWQC Source Water Fact Sheet.

II. GENERAL DESCRIPTION

“Start-up” is the term most frequently used when a pool is freshly filled but can also be used when opening a pool for the swimming season. Both definitions refer to balancing the water to prevent damage to the equipment and the interior finish of the pool, whether it be fiberglass, vinyl or plaster (cementitious). Most importantly, the start-up is essential to establishing a proper level of sanitation for safe swimming.

Determining the proper method of balancing the fresh fill pool water will be based on the test results of the source water, which should be tested prior to the filling of the pool. Source water can contain many different compounds and impurities that affect the amount and type of chemicals needed to produce quality water. It is crucial to test the source water for contaminants and determine the correct treatment action to minimize their effects.

There are several different start-up methods in the swimming pool industry based on environmental factors and the source water, whether it is well water or treated municipal water. The start-up can also be influenced by the interior surface of the pool. Fiberglass and vinyl liner pools are not subject to the same issues as plastered pools but require the water to be properly balanced for equipment and surface protection as well as sanitation. This fact sheet will only focus on the start-up for plaster pools.

PHTA Fact Sheets are for information purposes only. The Fact Sheets are based on the best information available at the time of publication and represent a consensus of the volunteer members of the applicable PHTA committee(s). Appropriate steps should be taken to ensure that the information is current when used.

The Fact Sheets do not constitute any promise, representation or warranty that a product or application referenced will in fact comply with applicable federal, state, or municipal laws, codes, rules and regulations concerning the intended use of such produce (“Laws”), nor any assurance,

representation or guarantee regarding or relating in any manner to the safety of any product or application that is referenced. Not every acceptable procedure is included, and special circumstances may warrant modified or additional procedures.

Fact Sheets are intended for the use of trained professionals in the pool and spa industry, in conjunction with prior training and knowledge. Where appropriate, industry members should seek the advice of knowledgeable persons to ascertain whether a product or application is appropriate or will in fact comply with applicable Laws. The use of information or recommendations in

this Fact Sheet is voluntary, and its applicability and suitability for any particular use is the sole responsibility of the user. Nothing in the Fact Sheets should be interpreted as expressing either approval of, or disapproval of, any product or service.

The PHTA expressly disclaims liability to any and all persons and entities for personal injury, property damage, and any other damage of any kind or nature, (whether or not such damages are direct, indirect, consequential or compensatory) resulting from, or in any way relating to these fact sheets.

III. FRESH POOL WATER START-UP PROCEDURES

The NPC has created start-up procedures for pools with a plaster interior finish. This includes the following:

- Marble
- Quartz
- Pebble
- Glassbead
- Blends of any of the above

These instructions are for a basic 28-day process for prevention of plaster problems and safe swimming. Swimming can only begin after the water is balanced and the proper level of sanitizer has been achieved.

Note: The manufacturers of many plaster products have specific instructions for their high-performance finishes that may vary from these procedures.

POOL FILLING DAY

- Make sure the equipment is set and has power.
- Test the fill water for pH, total alkalinity, calcium hardness and metals. Record results.
- Remove all floor heads and directional eyeballs. (This is an option that varies regionally).
- Fill the pool with clean potable water as rapidly as possible, without interruption, to the appropriate level. If a water truck is required, test the water from each truck. A water cushion of at least 24 inches should be in place before discharging water into the pool. At no time should any person or pet be in the pool prior to the complete filling of the pool.

DAY 1

- **Step #1.** Test pool water for pH, total alkalinity and calcium hardness and record results.
- **Step #2.** High total alkalinity should be adjusted to 80-100 ppm using pre-diluted muriatic acid (always pre-dilute the acid by adding to a 5-gallon bucket of water).
- **Step #3.** Low alkalinity should be adjusted upward to 80 ppm using sodium bi-carbonate, pre-dissolved in a 5-gallon bucket of water.
- **Step #4.** pH should be reduced to 7.2-7.6 by pre-diluting acid in a bucket of water. This is done (if needed) after adjusting total alkalinity.
- **Step #5.** Low calcium hardness should be adjusted to 80-100 ppm. Hardness increaser (calcium chloride) should be dissolved in a bucket of water (bucket will get hot) and adjustments added in 10-pound increments and brushed immediately, with each dosage separated by several hours. Never add calcium hardness increaser (calcium chloride) and alkalinity increaser (sodium bicarbonate) at the same time.
- **Step #6.** Brush the entire pool surface thoroughly at least twice daily to remove all plaster dust. Wheeled vacuums or wheeled pool cleaners should not be used until after 28 days (brush vacuums or non-wheeled cleaners are allowed).
- **Step #7.** Although optional, it is often recommended to add a sequestering agent, following the manufacturer's recommended initial start-up dosage. When using a sequestering agent, it is advised to continue the recommended maintenance dosage thereafter.
- **Step #8.** Continuous operation of the pump and filtration system is mandatory for seven days or until the plaster dust and other debris has been brushed away and filtered out, and the water is no longer cloudy (a minimum of 72 hours).
- **Step #9.** DO NOT add chlorine for 48 hours. DO NOT turn on pool heater – read manufacturer's recommendations, normally 2-4 weeks.

PHTA **FACT SHEET**

DAY 2

- **Step #1.** Test pH, total alkalinity and calcium hardness and record results. Repeat steps for Day 1 except for Step 7.
- **Step #2.** Once the total alkalinity is adjusted to 80-100 ppm and the pH is between 7.2-7.6, adjust the calcium hardness upward to 100-150 ppm. Dissolve calcium hardness increaser (calcium chloride) in a bucket of water in small doses of approximately 10 pounds and brush immediately. Allow several hours between additions. NEVER add hardness increaser (calcium chloride) and alkalinity increaser (sodium bicarbonate) at the same time.

DAY 3

- **Step #1.** Test and adjust pH, total alkalinity, and calcium hardness as per Day 2, Step 2, and repeat Steps 6 and 8 of Day 1.
- **Step #2.** Add pre-diluted or pre-dissolved chlorine to raise the Free Chlorine level to between 1.5-3 ppm level. (IMPORTANT: For saltwater pools, do not add salt within the first 30 days).
- **Step #3.** Brush entire pool surface at least twice daily to remove all plaster dust.

DAYS 4 – 7

- **Step #1.** Test and adjust pH and total alkalinity maintaining the ranges of Day 2, Step 2, and repeat Steps 6 and 8 of Day 1 for 7 days to help prevent the scaling of the pool surface.
- **Step #2.** In-floor and directional fittings may be added once water chemistry is balanced.

DAY 4

- **Step #1.** Calcium hardness should be a minimum of 200 ppm. Test and confirm level.
- **Step #2.** Begin adjusting the cyanuric acid (CYA) to 30-50 ppm. Remove both skimmer and pump baskets prior to adding through skimmer. Add CYA slowly through the skimmer while the pumps and filtration system are running, for a minimum of 3 days. Brush the pool thoroughly after adding to skimmer. Concentrated CYA can cause pigmented finishes to discolor.

DAY 7

- If there is any plaster dust remaining, remove it using a brush pool vacuum tool.

DAYS 7 – 28

- Continue to test frequently and make adjustments as necessary. Keep records of the test results and the amount of chemical used.
- Once plaster dust is removed, and with a good cleaning system in place, brushing can be limited to once a week and as needed to remove visually observed material (leaves, dirt) and when adding chemicals.

ALWAYS ADD A CHEMICAL TO WATER – NEVER ADD WATER TO THE CHEMICAL!

IV. SUMMARY

The source water used to fill the pool is not balanced or sanitary for safe swimming or to preserve the equipment and the cementitious materials used for tile, coping/rock, or plaster. Therefore, it is very important to follow recommended start-up procedures such as the one provided in this Fact Sheet. Following appropriate “start-up” procedures is just as important in a fiberglass and vinyl liner pool for the surfaces to last longer. It is imperative that frequent brushing, water testing, and chemical adjustments be made to the pool water for the first 28 days. After Day 28, it is suggested to test the pool water twice a week to ensure proper balance is maintained during the secondary phase of a plastered pool cure.

Due to unique source water conditions and environmental factors, parts of these recommended start-up instructions may need to be modified to protect the pool finish. **Please note, there is not a one-day startup that will safely and properly balance the pool water to protect the equipment, plaster and, most importantly, provide a proper sanitized swimming environment.**

V. REFERENCES

1. NPC “Testing Fill Water” Technical Bulletin #1, National Plasterers Council, Released January 2010, Revised January 2019.
2. NPC “Start-Up Procedures/Daily Water Chemistry and Maintenance”, National Plasterers Council, Released 2008, Revised March 2021.
3. PHTA Service Tech Manual, 4th Edition, pages 10-48 to 10-51, Pool & Hot Tub Alliance, 2010.
4. RWQC “Source Water” Fact Sheet, Pool & Hot Tub Alliance, January 2020.
<https://www.phta.org/standards-and-codes/fact-sheets/water-quality/>